

REMARKS/ARGUMENTS

In the Drawings

The Examiner has requested that Figure 1 be amended by adding the heading "Prior Art". Accordingly, Figure 1 has only been revised to include the heading "Prior Art". A copy of revised Figure 1 is enclosed. No new matter has been added.

Claim Rejections – 35 U.S.C. 112

Claims 1-6 have been rejected, pursuant to 35 U.S.C. 112, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention.

The examiner has suggested that the application "discloses no algorithms, flowcharts, or techniques for actually generating dimensions, creating a target object, or setting parameters of dimension annotations." The examiner has further stated that "matter that is critical to the practice of the claimed invention for supporting the limitations of the claims is absent from the specification." Furthermore, the Examiner has indicated that claims 1-6 have omitted essential steps. The Examiner has concluded that "one skilled in the art would not know how to make and/or use the claimed invention without undue experimentation." The applicant respectfully disagrees with the Examiner's conclusion that the specification is insufficient.

The applicant respectfully submits that the specification was sufficient for one skilled in the art to make and use the invention as claimed in original claims 1-6. The applicant submits that a programmer familiar with CAD programming at the time of filing the present application would be able to create the technology claimed in claims 1-6. The type of information contained in the AutoCAD user's guide, for example, would be generally known by or available to CAD programmers at the time of filing. In the context of information which was generally known to one skilled in the art, it is submitted that the specification is and was sufficient and complete to enable such a programmer to make and use the claimed invention.

Furthermore, while claims 1 – 6 as originally filed have been cancelled without prejudice (the "Original Claims") and new claims 7 - 18 have been added (the "Amended Claims"), it is submitted that the specification provides sufficient support for both the Original and the Amended Claims. No new matter has been added in adding these additional claims.

In support of the applicant's contention, the applicant has submitted the affidavit of Professor Desmond Walton, a computer science professor with extensive experience in computer graphics and CAD programming. The Professor has reviewed the application and the Original and Amended Claims and has concluded that the specification is sufficient. In paragraphs 14, 15 and again in paragraph 17, Prof. Walton states that:

14. In my view, as of June 9, 2000, **the description of the technology in the patent application is and was sufficiently full and complete, clear and concise to enable the programming and use of software capable of performing the methods as claimed in both the Original Claims and the Amended Claims.** While programming typically requires routine debugging, **no undue or unreasonable experimentation would be needed to reproduce the technology described in the application.**
15. It should be understood that it is not typically required to provide excessively detailed information about a software program, in order for another programmer to reproduce it. **In many cases, providing the functionality, or the way the software performs, is sufficient. The present patent application clearly describes the features and functions of the software as defined in the Original and Amended Claims, sufficiently for another programmer to reproduce and use it.**
17. Based on my experience as a professor, I am well aware of the skills and abilities of computer science students within our department. I am specifically of the view that as of June 9, 2000, **computer science students at the University of Manitoba during or at the completion of the third year of their Bachelor's degree (typically a four year program), upon reading the patent application would be able to program and use the software as claimed in the Original and Amended Claims, without needing to obtain**

additional information from the inventors and without unreasonable experimentation. **[emphasis added]**

The professor's conclusion that the specification provides sufficient support for a programmer to make and use the technology claimed in the Original and Amended claims is further supported by the enclosed Affidavit of David Borean, a programmer who at the request of one of the applicants was able to produce software described in the specification and claimed in the Original and Amended claims, prior to the filing date of the application.

Mr. Borean states that his programming "... work on the Software Application was routine and straightforward. Upon completion, the Software Application provided the desired Automatic Adaptive Dimensioning functionality." (para. 10). Furthermore, Mr. Borean recollected that the "patent application clearly describes the Automatic Adaptive Dimensioning method and technology, which is claimed in the Original and Amended Claims, and is consistent both in terms of scope and content with the information Mr. Haws provided to me in February of 2000." (para. 17)

In his view, "... as of June 9, 2000, the description of the technology in the patent application is and was sufficiently full and complete, clear and concise to enable [him] or any competent programmer to program and use software capable of performing the methods as claimed in both the Original Claims and the Amended Claims. ... [His] programming of the Software Application was straightforward and did not require any undue or unreasonable experimentation." (paras. 19 & 21)

Accordingly, in view of the applicants' submissions and the Affidavit evidence of Professor Walton and Mr. Borean, it is respectfully submitted that the Examiner's objection based on 35 U.S.C. 112 is unfounded and should be withdrawn.

Claim Rejections – 35 U.S.C. 102 & 103

Claims 1-6 have been rejected, pursuant to 35 U.S.C. 102(b), as being anticipated by U.S. Patent No. 6,232,985, issued to Chase et al., and further as being anticipated by U.S. Patent No. 6,256,595 issued to Schwalb et al.

Claims 1-6 have further been rejected, pursuant to 35 U.S.C. 103(a), as being obvious in view of the *AutoCAD User's Guide* in combination with U.S. Patent No. 6,232,985, issued to Chase et al.

Claims 1-6 have been cancelled. New claims 7 – 18 have been added which distinguish the invention over the cited art.

New independent claim 7 includes in step (e), cross-associating the first target object with the first dimension annotation, wherein as a result of such cross-association: (i) a change in the first coordinate position data will effect a correlated change in the first dimension annotation data; and (ii) a change in the first dimension annotation data will effect a correlated change in the first coordinate position data.

One of the advantages of cross-associating each object with its corresponding dimension annotation is that the accuracy of each dimension annotation with respect to its object is maintained. Any modification to one, will promptly effect a corresponding modification to the other. None of the cited prior art is capable of providing this advantage. Similarly, the cross-association limitation of step (e) in claim 7 is neither shown nor suggested in any of the cited references.

It is submitted that contrary to the Examiner's assertion, Chase does not teach or suggest even a uni-directional association (let alone the claimed bi-directional cross-association) between an object and a corresponding dimension annotation. There is no suggestion in Chase that objects and dimension annotations are associated such that a change in one effects a change in the other. Chase merely teaches a system for creating dimension annotations for portions or all of an image, upon the request of the user and after the image has been created (See eg. col.3, Ins 6-65). Contrary to the Examiner's argument, Chase does not discuss or consider the modification of an object, or the corresponding modification of a dimension annotation in response to the modification of an object.

Similarly, Schwalb also teaches a system for calculating and displaying the dimension between one or two part entities (eg. loop centers, circles, arcs, bend lines, etc.) **which have been selected by the user, after the image has been created** (See eg. col. 6, Ins 50 – 51 and col.7, Ins. 51-55). As with Chase, Schwalb does not teach even uni-directional association between an object and a corresponding dimension annotation such that a change in one effects another.

Contrary to the Examiner's conclusion, changes to a part entity do not effect a change to the corresponding dimension information. As part of the process of creating and drawing a dimension, "the dimension object also determines whether the data is defective, eg., **the attachment points disappear due to part data changes such as adding holes.**" (emphasis added, col. 20, Ins. 28-30) This step is carried out once the user has initiated the dimensioning process and has selected the part entities. If a change to a part entity effected a change to the dimension, it would be unnecessary to recheck the data for inaccuracies.

Furthermore, no ability is provided in Schwalb for directly amending the dimension information, and as a result Schwalb does not provide for directly amending the dimension information and consequently effecting a change in the part entities. As a result, Schwalb does not provide for the bi-directional cross-association as claimed in new claim 7.

The Examiner has asserted that "it is an inherent feature to the AutoCAD program" that it automatically modifies "the length/position of an object in response to a change in the dimension annotation", and cites Chase in support of this proposition (col. 2, Ins.29-33). Contrary to the Examiner's assertion, the cited passage in Chase merely states "...the host application program 118 comprises the AUTODCAD program sold by Autodesk, Inc., the assignee of the present invention. Also in the preferred embodiment, the QDim function 120 is an ObjectARX applet or add-in for use with the AUTOCAD program 118". Nothing in the cited passage suggests that a change to a dimension annotation will effect a correlated change to a corresponding object. Furthermore, nothing in the AutoCAD 14 manual previously submitted by the applicants teaches or suggests such functionality.

The Examiner has also suggested that Jackson teaches an association between each objects and a corresponding dimension entity, such that a modification to an object effects a correlated change to the dimension entity. With respect, the applicants disagree with this interpretation of Jackson. At most, Jackson teaches the uni-directional association of dimension entities to corresponding objects: "...linear dimension entities defining entities of CAD objects may be simply and conveniently modified, and modifications automatically applied to the chains of related dimension entities and the corresponding CAD components." (col. 8, lns. 21-25) Nowhere does Jackson teach or suggest that modifying an object would effect a correlated modification to the corresponding dimension entity.

It is also respectfully submitted that it would not be obvious to modify any of the cited prior art to arrive at the technology as claimed. The mere fact that a motivation exists to improve existing technology, is not sufficient support for a finding of obviousness. Absent a specific reason for modifying existing technology in a particular way to arrive at the claimed technology, any claim of obviousness is merely hindsight reconstruction which is impermissible.

As a result, it is submitted that the subject matter of new claim 7 and all claims dependent thereon (claims 8 - 12) are neither anticipated by nor obvious in view of either Chase or Schwalb, or the combination of AutoCAD 14 and Jackson.

With respect to new claim 8, this claim introduces the limitation that the steps of inputting and displaying a first target object and creating and displaying a corresponding dimension annotation and creating a cross-association (steps (a) to (e) in new claim 7) are completed **prior to inputting another target object**. This functionality, in combination with the cross-association identified in element (e) of claim 7 ensures that an image is accurately dimensioned throughout its development, as each object is added to the image and as modifications are made.

None of the cited prior art teaches or suggests such functionality or provides the resulting accuracy advantages of the claimed invention. Specifically, as noted

above, Chase and Schwalb both teach the creation of dimension annotations only after the image (composed of multiple objects) has been created, and only upon the request of the user. Accordingly, it is respectfully submitted that the subject matter of new claim 8 and all claims dependent thereon (claims 9 - 12) are neither anticipated by nor obvious in view of either Chase or Schwalb, or the combination of AutoCAD 14 and Jackson.

New claim 9 introduces limitations relating to determining intersection between target objects. Support for these limitations are found for example at p.8, Ins. 9-14 and Figs. 7 & 8. For reasons noted above, claim 9 depends from an allowable claim and is accordingly also allowable.

New claim 10 introduces the limitation of determining if a target object is adjacent to any other target object. Support for this limitation is found for example at p.7, Ins. 4-6. For reasons noted above, claim 10 depends from an allowable claim and is accordingly also allowable.

New claims 11 and 12 introduce limitations relating to modifying a target object. Support for these limitations are found for example at p. 6, Ins 24 - p.7, Ins. 6; and p. 8, Ins. 21-28, and Fig. 10. For reasons noted above, claims 11 and 12 depend from an allowable claim and are accordingly also allowable.

With respect to new independent claim 13, this claim also contains the cross-association limitation, together with the limitation that the steps of inputting and displaying a first target object and creating and displaying a corresponding dimension annotation and creating a cross-association (steps (a) to (e) in new claim 7) are completed **prior to inputting another target object**. Accordingly, for reasons similar to those noted above with respect to claims 7 and 8, claim 13 and all claims dependent thereon (claims 14-18) are neither anticipated by nor obvious in view of the cited art.

New claim 14 introduces limitations relating to determining intersection between target objects. As noted above, support for these limitations are found for

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example at p.8, Ins. 9-14 and Figs. 7 & 8. For reasons noted above, claim 14 depends from an allowable claim and is accordingly also allowable.

New claim 15 introduces the limitation of determining if a target object is adjacent to any other target object. As noted above, support for this limitation is found for example at p.7, Ins. 4-6. For reasons noted above, claim 15 depends from an allowable claim and is accordingly also allowable.

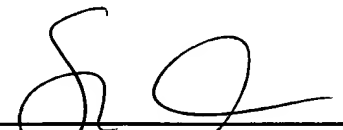
New claims 16 and 17 introduce limitations relating to modifying a target object. As noted above, support for these limitations are found for example at p. 6, Ins 24 - p.7, Ins. 6; and p. 8, Ins. 21-28, and Fig. 10. For reasons noted above, claims 16 and 17 depend from an allowable claim and are accordingly also allowable.

New claim 18 introduces limitations relating to determining whether a target object superposes any other target object. As noted above, support for these limitations are found for example at p. 6, Ins. 6-10; p. 8, Ins. 9-15 and Figs. 8 & 9. For reasons noted above, claim 18 depends from an allowable claim and is accordingly also allowable.

The applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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